

WHAT IS CLAIMED IS:

- 5 SUB 21
1. A mask comprising:
a base having a pattern formed on a surface;
a transparent member provided at the side of
the surface of the base; and
a correction part for correcting a change in
an optical path by the transparent member.
 - 10 2. A mask comprising a correction part for
correcting a writing error of a pattern.
 3. A mask comprising:
a base having a pattern formed on a surface;
15 a transparent member provided at a side of
the surface of the base; and
a correction part for correcting a change in
an optical characteristic due to a transformation of
the transparent member.
 - 20 4. A mask comprising:
a base having a pattern formed on a surface;
a transparent member provided at a side of
the surface of the base; and
25 a correction part, provided in the
transparent member, for correcting a writing error of
the pattern.

5. A mask comprising:
a base having a pattern formed on a surface;
a transparent member provided at a side of
5 the surface of the base; and
a correction part for correcting a writing
error of the pattern and a change in an optical
characteristic due to a transformation of the
transparent member.

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6. A mask comprising:
a base having a pattern formed on a surface;
a dustproof transparent member at a side of a
surface of a base; and
15 an aspheric surface provided at least one of
planes of incidence and exit of light in the
transparent member.

7. A mask according to claim 1, wherein said
20 transparent member has a dustproof function, and the
correction part has an aspheric surface.

8. A mask according to claim 6, wherein the
aspheric surface is formed onto said transparent member
25 at a side of the base.

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9. A mask according to claim 1, wherein the correction part is formed by an aspheric surface formed by a mechanical process to transparent member's surface or formed by vacuum evaporation.

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10. A mask according to claim 3, wherein the transformation of said transparent member results from a transformation of transparent member's own weight and/or a stress generated when said transparent member is attached to a frame.

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11. A mask according to claim 1, wherein said transparent member is attached to the base through a frame.

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12. A mask according to claim 1, wherein the base and the transparent member are made of quartz or fluorite.

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13. A mask according to claim 12, wherein the quartz is a fluorine doped quartz.

14. A mask according to claim 1, wherein said correction part is formed such that a ray emits to a proper optical path from each portion in the pattern.

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15. A mask according to claim 1, wherein said correction part is formed such that a distortion of an image of the pattern is reduced when the image of the pattern is projected by a projection optical system in an exposure apparatus when said mask is installed into the exposure apparatus.

16. A device fabrication method comprising the steps of:

10 exposing the pattern using a photosensitive body by using a projection optical system to project a pattern on a mask onto the photosensitive body, said mask comprising a transparent member at a side of a surface of a base, a pattern being formed on the surface, and a correction part for correcting a change in an optical path by the transparent member; and
15 developing the photosensitive body that has been exposed.

20 17. A projection exposure apparatus comprising:
a mask stage for installing the mask, said mask comprising a transparent member at a side of a surface of a base, a pattern being formed on the surface, and a correction part for correcting a change in an optical path by the transparent member;
25 an illumination optical system for illuminating the mask; and

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a projection optical system for projecting the pattern on the mask illuminated by said illumination optical system, said mask stage and said illumination and projection optical systems being
5 configured such that the pattern on the mask may be projected.

18. A projection exposure apparatus according to claim 17, wherein said illumination optical system uses
10 light having a wavelength of 200nm or smaller to illuminate the mask.

19. A projection exposure apparatus according to claim 18, wherein the light is fed from an ArF or F₂
15 excimer laser unit.

20. A projection exposure apparatus according to claim 17, further comprising a mechanism for adjusting a symmetrical distortion of said projection optical
20 system.

21. A projection exposure apparatus according to claim 17, further comprising a mechanism for adjusting a spherical aberration of said projection optical
25 system.

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22. A projection exposure apparatus according to claim 21, wherein the adjusting mechanism reduces a correction amount for a spherical aberration due to the transparent member.

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23. A projection exposure apparatus according to claim 17, wherein said projection optical system is a telecentric optical system at both object and image sides.

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